

PATENT COOPERATION TREATY

From the
INTERNATIONAL SEARCHING AUTHORITY

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE INTERNATIONAL SEARCHING AUTHORITY (PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/IT2004/000335

International filing date (day/month/year)
09.06.2004

Priority date (day/month/year)

International Patent Classification (IPC) or both national classification and IPC
C30B25/12, C23C16/458

Applicant
E.T.C. EPITAXIAL TECHNOLOGY CENTER S.R.L.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☒ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. FURTHER ACTION

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

Name and mailing address of the ISA:



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WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITYInternational application No.
PCT/IT2004/000335

JC20 Rec'd PCT/PTO 11 OCT 2005

Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
☐ a sequence listing
☐ table(s) related to the sequence listing
 - b. format of material:
☐ in written format
☐ in computer readable form
 - c. time of filing/furnishing:
☐ contained in the international application as filed.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY**

International application No.
PCT/IT2004/000335

Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	3,6-17,28-31
	No: Claims	1,2,4,5,18-27,32
Inventive step (IS)	Yes: Claims	8-17,28-31
	No: Claims	1-7,18-27,32
Industrial applicability (IA)	Yes: Claims	1-32
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VI Certain documents cited

1. Certain published documents (Rules 43bis.1 and 70.10)

and /or

2. Non-written disclosures (Rules 43bis.1 and 70.9)

see form 210

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

**WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING
AUTHORITY (SEPARATE SHEET)**

International application No.

PCT/IT2004/000335

JC20 Rec'd PCT/PTO 11 OCT 2009

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

Reference is made to the following documents:

D1: US 2003/233768 A1 (KAEPPELER JOHANNES) 25 December 2003 (2003-12-25)

D2: WO 03/069029 A (LPE SPA; PRETI, FRANCO; OGLIARI, VINCENZO) 21 August 2003 (2003-08-21)

Preliminary remark

The application does not meet the requirements of Article 6 PCT for the reasons given under item VIII. The following opinion with regard to novelty and inventive step is made taking this into account.

Novelty

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1,2,4,5,18-27 and 32 is not new in the sense of Article 33(2) PCT. The reasons are the following.

The document D1 discloses a support system for treating wafers in a CVD reactor. Referring to figures 1 and 2 of D1 and the corresponding passage in the description, it can be noted that this prior art document teaches all the constructional features of claims 1,2,4 and 5. Notably, in the support system of D1, the passages (6) through which the gas flows to support and lift the movable support element (2) are inclined and skew with respect to the rotation axis.

Independent claim 22 concerns a disc shaped support (susceptor) element per se. The document D2 teaches also such a support element (susceptor) having those features of claim 22. Notably, the bottom side of the element in D2 is provided with depressed areas. Figure 3 of D2 and the corresponding description (page 5, lines 3-7) show how these depressed areas can have various geometrical shapes including a depth which varies in the radial direction. These depressions will implicitly receive the thrust of gas flows.

Inventive step

The present application addresses the problem of designing a rotating support system based on the well known technique of lifting and rotating by means of a (gas) fluid-dynamic driving effect. The document D1 is considered as the closest prior art to the application. The difference between the apparatus of the present application, **as contained in dependent claims 8-17, 28-31**, and that of D1 appears to be that the gas driven rotation is enabled and controlled by means of specially shaped depressions in the bottom side of the movable support element/susceptor. In D1, and indeed other prior art documents, geometrical features such as helical grooves are formed on the upper side of the base element. This alternative construction does not appear to be suggested in the prior art and thus is considered to form the basis of a claim involving an inventive step according to Article 33(3) PCT.

Industrial applicability

The claimed subject matter is considered to be industrially applicable and thus fulfilling the requirements of Article 33(4) PCT.

Re Item VIII

Use of the word "*preferably*" in the claims renders their scope unclear within the meaning of Article 6 PCT. The expression "*shaped to receive the thrust of gas flows*" used in independent claim 22, does not limit the scope of the claim to any particular geometry of depression since any form of depression will receive the thrust of a gas flow should one impinge on the bottom side of the support element on which depressions are provided.